THE VETERINARY RECORD

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Meat Inspection.

The Sanitary Institute has for some years granted a certificate, after examination, to sanitary inspectors. The certificate is accepted by the Local Government Board as evidence of fitness for appointment, and local authorities now require candidates to produce this certificate. Since the report of the Royal Commission on Tuberculosis the Institute has decided to offer another certificate for *Inspectors of meat and other foods*. The report of the Commission recommends that in future no person be permitted to act as meat inspector until he has passed a qualifying examination. Under the general Sanitary Acts of Parliament the duties of a meat inspector can only be discharged by a sanitary inspector. If the public are to be protected it is obvious that the inspector of food should have some knowledge of his work, and it is to afford this protection that the Institute propose to give a certificate to those candidates eligible for examination.

For years we have been endeavouring to draw the attention of the veterinary profession to the necessity of taking part in sanitary legislation, so that it may be in a position to offer its services in the interests of public health and to share in any appointments which require the knowledge possessed by veterinarians. Meat inspection is one of the subjects which a veterinary education renders its possessor master of. No other calling affords either the training or experience necessary to make its members thoroughly versed in the appearance of animals in health or disease—alive or dead. Clearly then the proper person to inspect meat is the trained veterinary surgeon.

Logic, truth and justice are not, however, all the factors in deciding human affairs. We must take into consideration vested interests, public opinion, expediency and cost. Neither can we ignore the laws of the country. At the present time the law says meat shall be inspected by sanitary inspectors working under a Medical Officer of Health. The meat consumer and the meat salesman are not satisfied with the existing methods of inspection, and so the Sanitary Institute has arranged a scheme that will improve the inspection.

At a recent meeting of the Lancashire V.M.A. some desultory conversation took place on the subject of the proposed examination and certificate, with the result that a resolution was carried and ordered to be sent to the Royal College of Veterinary Surgeons. The resolution runs:—"That this Society views with regret the attempt of the Sanitary Institute to inaugurate a quasi-veterinary examination which must be impossible for anyone but a veterinary surgeon to pass, or else must be of such a character as to render it a complete farce, and calculated to mislead the public." Of all the speakers on the subject we only remember one who has previously shown either interest in or acquaintance with the subject. Mr. Wolstenholme has for years taken a prominent part in matters pertaining to public health, and his suggestion was that before any expression of opinion was formulated it would be advisable to discuss the subject thoroughly and then form a conclusion. This line seems so much in accordance with common sense and prudence that we regret it was not followed.

We have endeavoured to keep the profession informed of what was doing, and we have written more than one article to try and draw discussion—but no one has offered a word of guidance. The Lancashire Society in a few minutes—on the casual question of the President—decide that the work of the Sanitary Institute is a misleading farce. Such a decision is marked neither by thought nor modesty, and it redoubles our regret that Mr. Wolstenholme's remarks were not better attended to.

The resolution begs the whole question by the very stale trick of using words which misrepresent the issue. It supposes "a quasi-veterinary examination" which a glance at the syllabus and a reference to the rules would show was not proposed by the Institute, but only imagined by some one deficiently informed. A medical man, who had not taken the trouble to enquire might say of the Sanitary Inspector's examination that it was *a quasi-medical examination*. No medical man has yet ventured to make himself ridiculous by any such assertion. The resolution then prophecies that the examination will be such as no one but a veterinary surgeon can pass. Again we fail to see in the syllabus any excuse for such an assertion. Finally the resolution asserts that if the examination can be passed by anyone but a veterinary surgeon it must be "a complete farce and calculated to mislead the public." How in the world such an inference could be drawn we fail to perceive.

The fact is that no well informed person, whether medical officer, butcher, or Councilman, doubts that veterinary surgeons are the proper persons to inspect meat. This is shown by the ever-increasing appointment of the professional man whenever the two circumstances of a public abattoir and a decent salary are attainable. Veterinary surgeons are not likely to accept the position of sanitary officers with a wage of £2 a week, and therefore until private slaughter-houses are abolished we have our choice between leaving the meat to the present inspector or attempting to improve him. It is a great pity that any prominent veterinary body should in haste pass ill-considered resolutions upon such public questions as meat inspection.

VETERINARY SOCIETIES.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The usual quarterly meeting was held at the Grand Hotel, Manchester, on September 7th, when there were present: Mr. J. McKinna, president, and Messrs. H. D. Chorlton, E. Faulkner, Henry Hall, A. Kerr Hart, T. Hopkin, J. W. Ingram, W. Kendall, S. Locke, H. Locke, hon. sec., A. Lawson, E. H. Stent, W. A. Taylor, and J. B. Wolstenholme, of Manchester; A. Munro, Altrincham; W. Noar, Bury; J. H. Carter, Burnley; R. C. Edwards, Chester; R. O. Stafford, Crewe; Ernest S. Gubbin, Hyde; R. Hughes, Oswestry; W. G. Dixon, St Helens; A. M. Michaelis, Stockport; Ferguson, Warrington; and Wm. Woods, Wigan; the vistors were: Messrs. J. R. Green, (Midland V.M.A.), C. H. Harrison, R. Scott, J. K. Leyland, M. Williams, J. A. Dixon, and H. A. Turner.

Apologies for absence were received from Messrs. Jos. Abson, J. T. P. Carter, and G. Howe.

On the motion of Mr. S. Locke, seconded by Mr. J. H. Carter, the minutes of last meeting were taken as read.

The PRESIDENT pointed out that the matter of the Congress at Blackpool on the 21st instant, remained unconsidered, but that if it were the desire for the Association to be represented at the Congress there was still time to negotiate.

Mr. FAULKNER, considering it imperative that they should be represented, proposed that the President should attend the Congress and that his expenses be borne by the Society.

Mr. CARTER seconded the proposition, which was carried unanimously.

Mr. WOLSTENHOLME reported upon his and Mr. H. Locke's visit to the International Veterinary Congress and paid an excellent tribute to the generous hospitality of their foreign confrères. About a thousand delegates attended, comprising probably twenty English and Colonials, a dozen Belgians, and the remainder Germans and Frenchmen.

The PRESIDENT alluded to the Sanitary Institute Examination, and asked whether the Society would co-operate with, or oppose, the Institute.

Mr. CARTER said he was pleased the President had brought the matter before the meeting. The Association should frame a resolution strongly protesting against the action of the Sanitary Institute, when the other societies would no doubt follow.

Mr. WOODS then moved the following resolution:—"That this Society views with regret the attempt of the Sanitary Institute to inaugurate a quasi veterinary examination which must be impossible for anyone but a veterinary surgeon to pass, or else must be of such a character as to render it a complete farce, and calculated to mislead the public."

Mr. FAULKNER seconded the resolution.

Mr. WOLSTENHOLME said he would have preferred that a paper should have been read on the subject, followed by a good discussion, before coming to any decision. No one present would, he supposed, suggest that such a man as the Sanitary Institute proposed to create by their examination was less capable of performing the duties of meat inspection than those who had hitherto done it, for any policeman, whatever his previous vocation and whose only recommendation was that of some friend on the local board or town Council, had up to the present been considered quite a fit person to perform the duties, and he (Mr. Wolstenholme) failed to see how a proper inspection of meat could be secured while the present method of killing in private slaughter-houses was tolerated by the public. What was really wanted was a loud outcry on the part of the veterinary profession, supported by the medical profession, against the cruelty practised in private slaughter-houses, and a demand for the substitution of public abattoirs. Of course, in the less populous districts, where it would be too expensive for each little community to have its public abattoir, they could combine and have one common abattoir.

Mr. FAULKNER: It seems to me that the work we have undertaken for years in agitating for public abattoirs, and efficient inspection of meat by those most competent, viz., the veterinary surgeons, and the education our students have, of late, been receiving to bring them into line with the every-day requirements of meat inspection, is all going to be destroyed by one blow if the proposal of the Sanitary Institute is to be carried. It is simply absurd to expect such men as that Institute proposes to create by their examination, to be educated to efficiently carry out the duties of meat inspection. The resolution carried at Baden-Baden, to my mind, touches the matter. If these men were only utilised in a certain way under the control of a superior officer—the veterinary surgeon, then all right, but to give them the education proposed by the Institute is really, I think, foolish. It is a matter that would be no worse for being fully considered and thrashed out rather than being rushed, but, at the same time, I believe, that this is retrograde as regards our profession and it ought not be carried out.

Mr. HUGHES: I think the same as the others that if you create this new individual he will soon tell you that he is a superior officer to the veterinary surgeon, and will claim a special knowledge to pronounce an opinion on the subject at issue, and it is impossible to have a proper inspection of meat until we emphasize the opinion that there is urgent need of public abattoirs all through the country. If this man possessing this diploma is allowed to go into court before the magistrates, he will have a locus standi at once. I think we should speak emphatically and without doubt as to the advisability of creating this new degree.

Mr. HOPKIN: Do you not think that the Council of the Royal College ought to take this matter up?

The PRESIDENT: Yes. We are entitled to the examination of the carcase and of the living animal so far as it is destined for food. That ought to remain to us, and we should all fully endorse this, but, I think, as an Association, we are powerless to do anything unless the Royal College take this matter up, and they ought to defend our position.

Mr. FAULKNER: I was going to suggest that, if this resolution is carried unanimously, we might send it to the Royal College and ask the President and Council to give it their serious consideration as the outcome of the feeling of this meeting, and urge them to take any steps they may think desirable, under the circumstances, as would be advantageous to us.

Mr. S. LOCKE: I think that would be the better course. I feel strongly on this point, and should certainly vote for the resolution proposed by Mr. Woods.

Mr. W. A. TAYLOR: I have much pleasure in supporting the resolution proposed by Mr. Woods, on the understanding that it shall be sent to the Royal College at once, to whom we should look for protection inasmuch as they have granted diplomas qualifying us to practice as veterinary surgeons, and I look upon this new examination as an attempt on the part of the public to defraud us of that to which we have an inherent right.

Mr. LAWSON: As one of the members (for this district) of the Council R.C.V.S., I have read this proposition of Mr. Woods and shall take great care that it is brought before the Royal College when I will assist it as much as I possibly can.

The resolution, with the amendment that it be forwarded to the Royal College of Veterinary Surgeons, was carried unanimously.

CONFORMATION IN ITS RELATION TO DISEASE AND UNSOUNDNESS IN THE HORSE.

By R. HUGHES, F.R.C.V.S.

Mr. President and Gentlemen,—When asked by our worthy secretary to prepare a paper for discussion at this meeting I consented solely from a sense of duty as a member of this Association, and not from any feeling that I would have anything original to bring before you. Indeed I must apologise for having been such an indolent member, and so long in making an effort to provide a subject for discussion. The selection of a subject has been a perplexing one in so far that it is almost impossible for an ordinary practitioner engaged in a busy practice to conduct exhaustive experiments and be able to entertain his audience with original matter in these days of minute scientific research. However, my opportunities for observations in an important breeding district prompted me to call your attention to "Conformation in its Relation to Disease and Unsoundness in the Horse." It does not take a very keen observer to recognise that conformation plays an important part in the causation of some diseases and unsoundnesses.

"Like begets like" is an admitted fact, and if animals of a faulty conformation are used for breeding purposes the natural consequence is that some of their bad points, as well as the good ones, are transmitted to their offspring. We have indisputable proof that *colour* and *markings* are readily transmitted, and those of us that have known renowned sires used in our district can recall many instances in support of this. Amongst the Shire horses, take for example old "England's Wonder" transmitting his peculiar roan colour to a very large percentage of his offspring; "Carbon" its characteristic shaped head and ears"; "Bury Victor Chief," "Regent II," and the famous thoroughbred "Sir Albert Victor," their peculiar markings, therefore if colour and markings are so uniformly transmitted it is equally natural to expect peculiarities of conformation to be subjected to the same law. That is the value attached to our stud and herd books—to maintain the purity of the breeds and the continuity of their good qualities.

If we take heredity to mean "the capacity of every animal to produce other individuals of a like kind" we must accept the certainty of conformation to be transmitted in equal proportion to other peculiarities in the parents.

Environment doubtless plays no inconsiderable part in determining development. We have to consider the influence of different soils, etc., as to the growth and conformation of feet and limbs, meadow and hill pasture, forcing for early maturity, management as bearing upon temperment of the animal, etc.

I am not going to theorise upon the parts played by the sire and dam in the reproduction of their species, but simply state that according to my experience I have observed that size and outward conformation are chiefly transmitted by the sire, and according to the conformation of his frame so it will be to a large extent in the offspring.

If we took a general view of conformation as an indication of stamina and robustness of constitution it is a pretty reliable guide. Take, for example, a horse with a small sunken eye, a narrow and shallow chest, long hollow back, with a narrow, slack loin, and especially if associated with a badly expressed colour, we may predict such an animal to be a delicate feeder, a bad stayer at his work, and if at all pressed diarrhœa and fatigue are easily induced, and further if he is ill from any debilitating disease recovery is slow and often unsatisfactory.

To what extent conformation is responsible for the development of certain disorders it is difficult to ascertain with certainty, but we have frequently observed that a horse with a defective conformation at any given point is especially liable if incautiously worked, and wear and tear be persisted in, to fail in that part.

When consulted as to the fitness of animals for breeding purposes, it is important that we should recognise the relationship between the conformation and the general utility of the animal. It may be said of a horse as of a chain, that its maximum strength is that of its weakest point, *e.g.*, take a horse with a fine and well developed body, supported by weak and badly formed legs, owing to the disproportionate weight and substance the undercarriage will wear out sooner than they would otherwise do. Again, a strong powerful forehand is a great disadvantage if the hind quarters are weak and the propelling power is deficient and *vice versa*. Weak forelegs will suffer from excessive propulsion if the hind quarters are excessively powerful, and in each case the conformation will prove an important factor in the development of some disease or unsoundness.

In directing special attention to certain organs or parts of the horse we will commence with the mouth. I am satisfied that certain irregularities of the molar teeth arise from a faulty conformation of the mouth.

A horse with a "parrot" mouth is often troubled with irregularities of the molar teeth, particularly the upper anterior and lower posterior molars. From want of true apposition of the masticating surfaces, elongation of the non-wearing parts takes place which sooner or later leads to imperfect mastication of the food, and requires surgical interference periodically to enable the subject to maintain health. Likewise a disproportionate width between the upper and lower molars brings about a bevelled and distorted condition of the tables and renders operative measures a necessity.

I am not aware of any disease specially due to a peculiarity of conformation of the head and neck. Although some authorities think that a long well turned forehand predisposes to "roaring," I cannot support this view, having observed the affection in the extremes of conformation. From what we know of the neuropathetic origin and the hereditary character of the disease the most probable theory is that those horses with beautiful forehands had only inherited the conformation of their parents similarly affected.

There is a conformation of the shoulders that is frequently very troublesome – what is commonly termed straight shoulders—where the scapula is perpendicularly placed, the spine and its tuberosity excessively developed, and associated with it a wasted condition of the anteaspinata muscles. This conformation is specially liable to shoulder galls, and very difficult to cope with if we do not recognise the faulty conformation predisposing to it. I am further of the opinion that this conformation is sometimes the subtle cause of horses refusing to draw, from their inability to receive the weight on the proper weight-bearing part of the shoulders. Owing to the weight being received on the spine and its tuberosity the skin and cellular tissue over these parts become hypertrophied, tender on pressure, and ultimately we have an aggravated case of galled shoulders.

It is doubtful whether there are any diseases of the respiratory organs due to conformation of the chest, but in a narrow or shallow chested horse we would naturally conclude that recovery from any lung affection would be more tedious and uncertain than in one with a good conformation of chest.

The digestive organs are in close relationship with conformation, we often witness horses with long hollow backs, narrow, slack loins, and short back ribs the subjects of diarrhœa, and anorexia, and when such animals are troubled with impaction of the colon it frequently ends fatally. As regards the pelvis I often consider that ever-

sion of the uterus is due to conformation, viz., a roomy pelvis with a relaxed state of the vulva and of the uterine ligaments.

As veterinarians, diseases of the locomotory organs concern us most. Great many of them are hereditary, but many of them are due to conformation and in that sense they are congenital, *i.e.*, any peculiarity, abnormality, or malformation in existence or demonstrable at birth is congenital. In these organs we have the best proof that conformation has a close relationship with certain diseases or unsoundness, *e.g.*, calf knees predispose to spavin of the flexor tendons, owing to the excessive strain thrown upon them. Horses that turn their toes out and have large flat feet are specially prone to "striking" or "interfering," but this is also much aggravated by faulty action and shoeing.

Abnormally narrow, or weak and low heels, especially if the horse has long weak pasterns and stands with his fore feet wide apart, are specially predisposed to "corns."

Ringbones, sidebones, and navicular arthritis are also connected with peculiarities of conformation.

In the hind limbs—especially the hocks—we have better examples of the close relationship existing between conformation and the development of certain diseases. Excessively straight (upright) or sickle-shaped hocks are frequently affected with "bog spavin," and a "tied-in hock" which is dependent upon a defective development of the lower portions of the hock and upper end of the metatarsus is particularly predisposed to "bone spavin," especially if such a conformation of the joint is associated with powerful, broad, and well developed hind quarters and thighs, which unduly exercise the weak, narrow hocks and lead to disastrous results.

Curbs again, to a very large extent, are the result of a faulty conformation. Curby-formed, "tied-in" and sickle-shaped hocks are specially predisposed, especially in young horses that are indiscreetly handled or overworked. The reason for that is a short os calcis which acts like a lever and becomes unduly compressed by the forcible action of the extensor tendons.

Many more instances might have been cited in support of the intimate connection between conformation and unsoundness, but I have already wearied you enough, suffice it to say that conformation is highly hereditary, and associated with a faulty outline there is a special liability to injury.

In our capacity as experts in the examination of horses as to soundness, conformation must always command a very large share of our attention, because I hold that it is impossible to form anything like a satisfactory opinion without having regard to it. There are some, I have no doubt, that hold the opinion that we should not take cognisance of conformation; as long as no unsoundness exists that is all that is required of us. I would ask those authorities if we can estimate the working capacity and usefulness of any horse without having regard to it, *e.g.*, what value can we attach to sidebones if we ignore the conformation of the feet and pasterns. Calf-knees and badly developed flexor tendons, curby-formed hocks should always be noted, so also faulty conformation of stifles, although the animal is sound, in a carthorse.

Discussion.

Mr. Lawson, in opening the discussion, expressed his obligation to Mr. Hughes for his paper, the half of which he had, unfortunately, not heard. It referred, he noticed, to mating—that is finding a proper sire for a proper dam—and going about the country as he did he saw a great mistake was made by breeders not having the proper advisers to mate their mares. Could it not be suggested to the various county councils, or to the Government, that certain veterinary surgeons might be appointed for stated districts who might be consulted and could advise which horse would be suitable for particular mares. As to horses with long necks, his experience was that these, as a rule, went wrong in their wind. Had Mr. Hughes come across in his district horses with flat or pumice feet? The sidebone question, especially in cart horses, was a very curious one. Sidebones were rarely to be found in light horses. If they were, the animals invariably went wrong from them.

Mr. Carter said he took no notice of cart horses with good open heels and good feet with a little sidebone.

Mr. S. Locke said they were all very much obliged to Mr. Hughes for his remarks respecting conformation. A practitioner, if he would give satisfaction to his client, ought to be well up in conformation. Sidebones, in cart horses, did not as a rule do much harm provided there was a good formed leg with good feet. On the other hand, if there was a narrow straight foot and straight pastern he would not recommend a client to purchase horses of that kind, nor light horses that have to continually trot. Hunters with long necks were, in his opinion, suspicious with respect to being whistlers or roarers. There were other signs of conformation in which an adviser ought to be well up. Short backs, good deep heart ribs—shoulders in proper position. Horses with short ribs and long backs were not generally very good ones as hunters, or as shaft horses.

Mr. Faulkner, after thanking Mr. Hughes for his paper, said conformation, undoubtedly, had a great deal to do with regard to disease and unsoundness in horses. Of course his experience in the town was not to be compared to that of Mr. Hughes, who had opportunities of observation in a large breeding district. The Breeding societies had been and were doing a lot of good, and conformation was more closely watched now in mating than hitherto to his knowledge. With respect to sidebones, he believed that, under favourable conditions, they were not troublesome. There was no doubt in regard to conformation of the neck and wind that many good judges of horses avoid those that had to gallop with an extra long neck.

Mr. Taylor said that conformation had a great deal to do, or ought to have, in the formation of a practitioner's opinion as to the suitability of a horse for his client's work. Did Mr. Hughes consider that a *roach back* predisposed an animal to any particular disease and, if so, in what respect as regards a saddle, or harness horse. Horses with long necks he (Mr. Taylor) regarded with suspicion. Had Mr. Hughes noticed, as to the width of the intermaxillary spaces in the lower jaws, that a so-called narrow lower jaw, was prone to become unsound in wind. What did he mean by calf knee, because some people considered that the calf knee was somewhat "in-kneed" while others meant where the knee was in a backward condition (Mr. Hughes: The posterior of the knee). He could not say from actual experience that he had seen many cases of sprain of the flexor tendons. In that conformation he had known one or two hunters with it. They suffered from over-riding of the fetlock joint in addition to the standing back of the knee. Then, again, with regard to the stifle, he understood Mr. Hughes to say that a thin narrow stifle and where the patella was not well "strung up" by the muscles and ligaments there was some probability of the animal becoming unsound from disease or through work. In that condition of stifle, which he apprehended to fall under the category of straight stifle, he entirely agreed with Mr. Hughes' views. He always regarded such animals with suspicion for whatever work—for slow work, or nag, hunter, or thoroughbred. A very straight hind leg with a long pastern he always considered a great fault in conformation. With respect to sidebones, he should never recommend a client to buy a hunter with a sidebone, or a harness horse or a nag with one. Given a good foot, wide open heel, and plenty of horn, and the sidebone not too anteriorly situated

he would certainly advise a client to buy a horse—at a price to be agreed, of course.

Mr. HOPKIN said he doubted whether conformation played so great a part as environment, temperament, and disposition. Suppose half-a-dozen of the best race horses were brought before competent practitioners, how many defects would they find? Any quantity. It was not from the conformation but from the performance, and they would find, on looking at a horse which had beaten its fellows, lots of faults with its conformation, whereas another, which was before its fellows in conformation, would, in performance, be only secondary. He doubted, unless it was the veterinary surgeon from the country districts, whether they were the best judges of what was suitable for breeding. The men who watched the foals from birth, saw their development and learned their disposition and adaptability, would be more successful as breeders than the so called experts, some of whom had made lamentable failures. With regard to stifle lameness in cart horses, this was rarely seen in town. As to jibbing, this depended more upon the temperament of the animal than upon any conformation. Conformation played an important part in roaring. Respecting sidebones, he had been considerably struck with the trouble that some of the American horses had. Any bone affection, or any bony deposition taking place in an American horse did seem to make most rapid progress. American horses with sidebones were dangerous subjects.

Mr. WOLSTENHOLME considered it a very rare thing indeed for horses to be lame with, or from sidebones. Stifle lameness was extremely rare in cart horses and when discovered could always be traced to some well-defined accident. For years he had been surprised that there had not been more stifle lameness considering the pressure put upon the patella in the backing and starting of loads, but from his experience it was not common in cart horses.

The PRESIDENT thanked Mr. Hughes for his valuable paper, adding that he had no doubt whatever that conformation played a very important part in reference to disease and unsoundness in horses. Respecting sidebones, what a large percentage of Clydesdale horses that had these and yet the animals worked well comparatively. He agreed with Mr. Hopkin in the question of environment.

Mr. LAWSON said he would like to know whether in Mr. Hughes' experience from the breeding going on now-a-days he thought there were fewer cases of horses with sidebones than there were some years ago. His experience during the last few years, and he had gone through a considerable number of cart horses, was that there was a marked decrease of horses with sidebones.

Mr. HUGHES, in responding, said there was certainly a most important and very interesting feeling with regard to the suitability of animals for breeding purposes. Representing an important breeding district as he did he could say unhesitatingly that there was not so much sidebone now, and that was the result of educating the breeders. Since the Commission sat, or inquiry made into hereditary soundness, a voluminous amount of evidence was collected, and a schedule was formed scheduling certain diseases as hereditary. In his district they were very particular in the matter of mating. A sire with an upright pastern, and especially with a small foot, he was quite sure that a large percentage of his progeny would have a similar conformation, and that conformation had a large bearing upon sidebones. To reject every horse as far as utility was concerned on account of sidebones, they in his district would have to reject as much as 30 per cent. perhaps. An upright pastern and a small foot narrow at the heel with the sidebone anterior placed—there was a source of danger. On the other hand a nice sloping pastern, with moderate dip, heel open wide, and the frog well developed, and the sidebones well placed he did not think the sidebones would be troublesome.

Reference had been made to roaring. This, they knew, was much more common in large than small horses, and very common in racehorses. Its cause, or its chief cause, was heredity, and not one due to conformation. He did not deny that conformation had got something to do with it, provided there was an exciting cause. They were all agreed, he thought, as to the importance of conformation of the feet and the pastern, and also the situation of the sidebone, provided that such an animal had come to maturity. With regard to umbilical hernia there were conditions affecting the fœtus as well as affecting the dam prior to birth, and he considered that hernia either umbilical or scrotal was due to accident or interference with development before the fœtus was born. It was very difficult to trace whether hernia was due to heredity or accidents in environment. The nature of the pasture and food had an immense bearing on the subject both as regarded conformation of the legs and of the feet, and of their endurance in their work. Conformation of the shoulders (that is badly formed shoulders in cart horses more particularly) were more or less hereditary. Odd feet were very common in thoroughbreds, and were undoubtedly hereditary.

On the motion of the President, seconded by Mr. Taylor, a hearty vote of thanks was accorded to Mr. Hughes for his able paper.

SPECIMENS.

Mr. H. LOCKE exhibited a specimen of a ruptured œsophagus.

Mr. CARTER submitted a specimen of two fractured tibia of a black cob, and described the case as follows:—On June 19th I was called in to see a black cob which the owner had been showing to a likely purchaser, and only a matter of £1 or £2 between the parties prevented sale. The owner drove away (and I fancy was doing a little showy performance on his own account) when he informed me that the cob commenced going dead lame from no accountable cause. It was then a question of putting up at the nearest available stable, so the animal was walked to the stables of the Burnley Carriage Company. I was at once sent for, and upon arrival I found the cob dead lame on the off hind leg. On careful manipulation of the limb from hip down to fetlock joint there was nothing particular to be felt, but on further examination I found a spot on the inner aspect of the thigh which pitted slightly on pressure, and the animal evinced much pain. Upon walking out of the stable the animal walked on three legs and had great difficulty in getting back again. I informed my client I could not say what was the actual mischief, unless there was a partial fracture of the thigh, but being twilight would give no definite opinion, so had the animal put into slings and ordered formentations and administered a dose of physic. The following day, June 20th, I found my patient much about the same, continued same treatment and visited again on the following day, June 21st, and found treatment was being neglected, so ordered those in attendance to walk the animal down to my place and to be careful and let the animal take his own time, and rest whenever needful. Arrived all safe and placed in comfortable loose box and put into slings. The treatment was continued until June 26th (six days from accident) when a man came down with a float and said his master wanted the mare at home, and that he was to take her back in the float. I told him he was very foolish as the mare was certainly not fit to be removed, and that such a procedure would be attended with great risk, for if she went down I was afraid she would never rise again, but in spite of my entreaty he would take her and that I could attend to her at his farm. He got the float in position and the door down. My assistant, who

had hold of the halter rope at the time, wisely gave it into the hands of the man, who, taking hold, urged the mare to mount the slope, whereupon she endeavoured her best to do as bid, but as soon as she got her fore feet on the sloping door she was noticed to swerve on her hind quarters and before anyone could render assistance down she came, with the result that she fractured both her tibia, comminuted fracture. I at once dispatched her by placing my hand, per rectum, and making an incision into the posterior aorta. The bones produced are the tibia in question, and upon closely examining the distal extremity of each you will find them to be very brittle and of a chalky nature, proving the faulty nature of the bone substance, containing, in my opinion, a superabundance of lime salts and a deficiency of animal matter, hence the cause of fracture under the circumstances named.

Mr. CHORLTON exhibited a live dog, showing a fracture of the leg.

Mr. WOLSTENHOLME, for Mr. J. T P. Carter, exhibited a specimen of the brain of a horse which had died suddenly from putting a twitch on.

A cordial vote of thanks was accorded the gentlemen who exhibited specimens, on the proposition of the President, seconded by Mr. Lawson.

NATIONAL VETERINARY ASSOCIATION.

MILK FEVER IN COWS.

By F. T. HARVEY, F.R.C.V.S., St Columb

Abstract of paper read before the meeting at Plymouth.

(*Continued from page 183.*)

PATHOLOGICAL ANATOMY.

In rapidly fatal cases of milk fever it is generally admitted that very little may be seen on post-mortem to account for the symptoms shown during life. The abdominal viscera present nothing noteworthy. The lungs are frequently engorged with dark-coloured blood, and foreign substances may be found in the trachea and bronchial tubes. The brain and spinal cord show the most characteristic change, but even here the appearances are far from constant. "The vessels of both the cerebrum and cerebellum are turgid with blood, and extravasations of blood are not unfrequently met with between the membrane of the brain, within its ventricles, or on its surface. A similar state of the vessels will be found in the brain and spinal cord, especially in the cervical portion." (Simonds). In some cases serous effusion takes place between the cord and its sheath, and also on the surface of the brain. In cases dying late the lumbar portion of the cord is sometimes quite disorganised. Indeed, in all cases dying after a few days illness grosser anatomical change will often be found; pneumonia may be present, the gastro-intestinal area congested, the kidneys softened, and the uterus may contain a stinking fluid. None of these appearances, however, may be said to be special to milk fever, but the outcome of blood changes and disorded functions such as are always present in apoplectic states.

The muscles of the thigh and lumbar region frequently show great change, extravasation of blood, and rupture of muscles being noted. The disease would appear as if it spent itself on these parts. It is probable, however, that these changes are accidental owing to the animal falling about and bruising the part at a time when the muscles are in a state of spasm or cramp. The occurrence of coma and feeble action of the heart also assists in the production of stasis, an event still further probable when the cow has remained long on one side. In this way gangrene is brought about, and failing this the damage is sometimes so great as to render recovery impossible.

In a recently fatal case of our own we noticed congestion of the brain and its meninges, but no extravasation of blood. The lungs were congested and the heart was dark in colour, and both sides distended with black coagulated blood, notably the right side. No antemortem clot. The uterus was contracted and sweet; death was due to failure of the heart. This cow never entirely lost consciousness.

It is possible, however, if not probable, that the uterus when found contracted post-mortem might not necessarily be in a contracted condition during the life of the animal, or at least for some time before death, unless we suppose that in milk fever rigor mortis played no part in the uterine walls after death. Fleming says: "The uterus is generally firmly contracted on post-mortem." It certainly however is not so during the course of the disease, as a manual examination will often prove when a partial prolapse of the organ is often noticed. A review of the whole question of the pathological anatomy of milk fever leads one to the conclusion that the anatomical changes in the disease are very slight in the cases which recover, are not constant in those which die, and are of the nature usually resulting from the presence of some morbific element in the blood, inducing through the vaso-motor system profound local disturbances of nutrition. Investigators have in the past endeavoured to found a pathology of milk fever on the basis of its morbid anatomy, it is likely however that we shall obtain more correct information by directing attention to the practical absence in the great majority of cases of any marked structural change.

NATURE.

The pathology of milk fever has been a moot point for generations, and it will be unnecessary to enumerate all the theories which have from time to time received attention. There are three physiological processes requiring notice in any discussion having reference to the nature of milk fever, viz: metabolism, secretion, and absorption, as they affect the mammary gland.

The Mammary Gland as a Metabolic Tissue.—According to Foster the mammary gland ought to be regarded as a metabolic tissue, since the phenomena giving rise to the secretion of milk are so marked and distinct, for there is evidence in the gland of the formation by the direct metabolic activity of the secreting cell of the representatives of the three great classes of food stuffs—proteids, fats, and carbo-hydrates, out of the comprehensive substance protoplasm. The amount of protoplasm split up in the gland would therefore determine the quality if not the quantity of the milk secreted, and we know that the milk usually yielded by cows predisposed to milk fever is rich in the food stuffs above mentioned. It is in these cows therefore that mammary metabolism is more active than in any other animal known to us. Moreover, the cells would appear to be most active at or about the beginning of lactation, this activity gradually diminishing with time. They (the cells) work something after the manner of a mail boat going at full speed almost from the start. This full speed however is attained gradually though rapidly in both instances, and the period of its attainment corresponds in the cow with the period of greatest danger from milk fever, and it is one in which the cell has not attained its proper activity, viz: during the colostrum period.

"When the action of the cell is imperfect, as at the beginning or end of lactation, the albumen in milk is in excess of the casein, but as long as the cell possesses its proper activity the formation of casein becomes prominent."—Foster. No other organ splits up so much proto-

plasm, the resulting products being lost to the organism, as is the case with the mammary gland.

The mammary Gland as a Secreting Organ.—Milk is both a secretion and excretion, and both secretion and ejection of milk are under the control of the nervous system. Its exact nervous mechanism is not known. The secretion is not arrested even when the sympathetic as well as the spinal nerves are cut.—Foster.

It is only in recent years that physiologists have come to appreciate to their fullest extent the true importance of the glandular tissues. We now know that internal secretions are of no less importance than those which we commonly regard as external, and that every tissue or organ of the body furnishes an internal secretion.

"Certain important glands which are provided with ducts possess not only the faculty of yielding an external secretion, but have equally important, if not more important functions, in connection with internal secretion, as in the liver, kidney and pancreas. The same result is not obtained with all glands. The salivary and also the mammary gland may be removed without any marked symptom supervening, and with respect to the latter we may assume that although they yield an internal secretion of some sort to the blood it is of the same nature as that yielded by other organs, and that such other organs may act vicariously for those removed." (Schafer on "*Internal Secretions.*")—*Lancet*, August, 1895.

Nature seems, therefore, to have imposed special duties in the matter of furnishing an internal secretion to the whole of the internal glands (or those protected from external injury) of the body, each being of itself necessary to life in consequence of such duties; thus we include the liver, pancreas, kidney, thyroid, pituitary body, and the pre-renal glands, each having special duties as furnishing an internal secretion important to the nutrition of the organism. On the other hand the external glands (those liable to injury from without) are unnecessary to life in this way and may have their duties vicariously performed. These latter glands do, however, furnish an internal secretion, and as far as we know the amount and importance of this secretion will have some relationship with the degree and developement of the organ and its metabolism. If we grant that the mammary gland does furnish an internal secretion, and that under certain conditions in considerable amount, there is nothing improbable in supposing that if the organ was disturbed in its function that secretion might suddenly cease or a toxic one be formed in its stead. It does not follow that because the internal secretion of the milk gland may be furnished by another tissue that we must exclude from it altogether the power to possess at times toxic powers, particularly where it is probably formed in large amount, as in the cow.

Disturbance of function of certain internal glands or alterations in their structures are usually associated with certain recognised diseased conditions; thus the pancreas is usually diseased in glycosuria; the thyroid in myxœdema; the supra renals in Addison's disease. In the case of the mammary gland, however, we cannot associate in our mind any recognised diseased conditions with it in any animal, and the same may be said of the salivary glands (we are not speaking of traumatism or infection). The internal and external glands have therefore much the same relationship both from a physiological and pathological standpoint. With special identification of function with nutrition we find associated certain recognised diseased conditions, but with vicarious performance of function there are not attached special morbid states.

What has been said, however, in reference to the mammary gland, and the absence of any general disturbance in the nutrition of the body as a whole when the gland is diseased, either functionally or structurally, applies only to those milk glands which have not become developed in response to an increase in function, they (milk glands) are used for maternity only, are periodical in their action, and have usually long periods of quiescence. But when we find a gland which has become so much a part of the economy as is the case with cows usually attacked with milk fever we must, I think, admit that derangement of its functions may be followed by consequences more important to the system than would be the case in other animals. In fact, we believe that the development of the process of lactation beyond its usual run may, in any animal, result in the occurrence of a kind of milk fever, or mammary intoxication in that animal when derangement of the function occurs. We see a mild attempt at the production of milk fever in the goat. (Friedberger, Fröhner, Williams). Also in the sow when she has been confined and highly fed, and at the same time possessing a large lacteal apparatus.

The Mammary Gland as an organ of Absorption.—Absorption of its own secretion, the milk, or at least that part of it which is in solution, goes on very rapidly under certain conditions from the mammary gland, so that there would be no difficulty in any product formed finding an easy entrance into the general circulation. As an example of the powers of absorption possessed by the gland we may instance that which occurs in stenosis of the duct of the teat; a large quantity of milk disappearing in a few days in such a condition. Besides, according to Barnes, a process of active absorption at once sets in after parturition, and which affects the whole body; effusions, etc., in various parts disappearing. This applies to all animals, and constitutes a sort of endogenetic toxæmia, and of which milk fever can only be regarded, I think, as a special variety met with in the cow. When the poison is absorbed from without and formed by micro-organisms the toxæmia is heterogenic. When bacterial products are absorbed, however, milk fever is rarely met with. Whether, therefore, as a metabolic tissue, or as a secreting organ, or as an organ of absorption, the mammary gland offers special points for consideration, and that more particularly in the case of the cow.

"Pathologists are more and more regarding the structural changes found in many diseases as mere manifestations of the presence of a toxic substance. It has been demonstrated that the body is constantly subjected to the risks of poisons produced within itself as well as poisons introduced into it from without. The organism even in a state of health is a veritable storehouse of these toxic substances. Many of the products of its glands, such as saliva and bile contain toxic ingredients; many of the substances formed in the processes of disassimilation and which enter such secretions as the urine and those of the intestinal canal are capable of disordering health and even endangering life: *and in disorders of function, even if they amount to little more than mere disturbance of nutrition, poisons not found in the healthy body are generated and produce symptoms of disease.* By such toxic influences the symptoms of many diseases receive a sufficient explanation although the toxic substances have not in all cases been identified."—Professor Fraser.

The italics in the above quotation are mine and I have used them to direct attention to a passage which eminently applies to the disease under discussion, milk fever.

It has been already stated that there are no lesions in the mammary gland in milk fever of the nature of an inflammation, while it seems highly probable that some change does take place in many if not in all cases, and which we have thought to be of the nature of a neurosis. The changes and mechanism are perhaps not dissimilar to those changes which take place in a neurosis affecting the skin. Kaposi's description of an angino-neurosis of the skin as given by Hamilton is as follows: "Firstly, a contraction of the small arteries in a small area of the papillary layer of skin takes place by stimulation of the vaso-constrictor nerves, or in virtue of the protoplasmic

vitality of the capillary walls. To this succeeds, secondly a period of relaxation of the wall and dilatation of the channel, followed by hyperæmia and slowing of the blood current. The relaxation results from paralysis of the vaso-constrictors or stimulation of the vaso-dilators."

"In accounting for these angino-neurotic manifestations we must suppose that some stimulus is applied to the nerve mechanism concerned either centrally or peripherally.

(1) Thus it is comprehensible that the vaso-motor centres in the medulla may be acted upon directly by a poison. **(Arising, say, from acute indigestion, or in other ways.)*

(2) Stimuli applied to the periphery may influence these centres reflexly. *(Cold, heat).*

(3) The centres in the higher brain asserting an influence over the blood vessels may be excited directly or reflexly *(As in excitement).*

(4) Apart from any nerve impulse propagated from the great nerve centres there is reason to believe that direct application of stimuli may act upon the vessels."—*Milking, etc. Text Book of Pathology.* Vol. 11, pt. 11.

It would therefore appear that the causes of a neurosis are almost identical with those which we have found to act as exciting causes in milk fever, and we think that the initial phase in the evolution of a case of milk fever consists mainly in the occurrence of neuro-vascular changes in the tissues of the mammary gland, resulting in the disturbance of the functions of the organ and the elaboration therein by its cells of some substance not usually present in the gland.

Chemical pathology and physiology both teach us that the cells of the mammary gland are subject to the same laws and processes as other cells, especially those engaged in secretion, and that they are subject to disturbance, and they may then often produce some toxic material other than what they usually elaborate. If this substance gains entrance to the blood in larger amount than the economy can dispose of it, intoxication results. The cow with her specialised udder produces, when that organ is deranged, more of this by-product or toxin than other animals, and is therefore more liable to be intoxicated. And not only does the cow produce this toxin in larger amount when the cells are deranged in function, but we have seen that the cells are more exposed to external influences and impressions in the mammary gland of the cow than in any other animal. And we have further seen that milk fever increases *pari passu* with the development or increase of these external influences on the working of the gland.

It seems therefore to be the most reasonable view to take of the nature of milk fever, to regard it as consisting essentially in an auto-intoxication having its origin in the mammary gland, and that the disease may be identified with functional disturbance of the gland in the same way as structural changes in the pre renals or thyroid are identified with Addison's disease or myxœdema.

Explanation of the Symptoms.—The sudden development of the symptoms in milk fever is due to a sudden and rapid increase in the amount of toxin in the system, and their equally sudden disappearance to a contrary cause. The type of symptoms will depend largely on the kind of reaction offered by the system to the disturbing element. Sudden death may occur from a large dose.

Franck's cerebral anæmia and the hyperæmia of Simonds and their attendant symptoms may all result from the action of the toxin, while permanent damage to certain tissues may also result, as in other toxic diseases.

The amount of these toxic substances necessary to produce in certain instances a given effect is very small. Thus, speaking of the active principle contained in the medulla of the supra-renal glands, Prof. Schafer says that less than 1-800th of a grain is sufficient to produce distinct physiological results in an adult man.

Prophylaxis.

The prevention of milk fever is a subject which has received great attention from veterinarians in this country, and with results strikingly variable. Prof. Simonds writing in 1880 discussed the prevention in a very able manner. Failures in preventing the disease occurred with him so often that he even asked the question whether milk fever was as difficult to prevent as to cure.

There are two principles to be followed in the prophylaxis of milk fever, one having for its object the temporary reduction of the milk gland to a state of activity only sufficing for the support of the offspring, and the other in avoiding as far as possible all those exciting or contributory causes which we have alluded to in discussing the etiology of the disease. To obtain the first indication we must adopt a restricted diet, and order exercise, in fact any measures of a depletive character, such as bleeding, the use of purgatives, or milking some time before calving. The latter plan is highly spoken of by some. It involves practically no rest on the part of the gland from one period of lactation to another. Newman (*Veterinarian* 1879) found the best preventive was to keep cows on a moderate quantity of dry food for two or three months prior to calving. Bond (Plymouth) found a diet of hay and water for three weeks before calving, and for three days after, combined with a purgative highly successful. Bleeding before calving has been highly spoken of by some, others putting little faith in it. Simonds advised it where plethora existed, and Shipley rarely or never had a case of milk fever in a cow which had been bled prior to calving; while Santy considered the practice much more reliable than the giving of medicine. He considered the practice hastened the period of parturition a few hours, or a day. Prudames also found bleeding successful, but that the period of parturition was hastened, and sometimes the quantity of milk for the first few days was lessened. Beeson, Sen., (*Veterinarian*, 1879) gives a record of a dairy of four cows, extending over a period of 28 years. For the first 14 years there were 26 calvings, and out of that number 11 cases of milk fever—4 died and 7 recovered. In the second 14 years all the cows were bled before calving and no deaths occurred, four had slight symptoms of "dropping" but none died. There were 41 calvings. He found no other method so safe and certain. My own opinion is that bleeding immediately after calving, or just before, is as likely to cause the disease as to prevent it. (I have seen a cow bled and go down in a few hours and die.) It should be done some days before, and the same practice must be followed in reference to purgatives, exercise and diet, for when only adopted at or about the time of calving they are of little use. If nothing has been done to prevent the disease up to the time of calving we can only carry out the indications involved in the second principle. Thus we should avoid over repletion of the stomach after calving, and keep the animals free from excitement as much as possible. We should leave the udder to the calf, or in drawing off the milk imitate the natural method and draw off only a small quantity at a time. Schmidt says: The animal should not be milked for two or three days before calving, nor milked dry for a similar period afterwards." We believe with Simonds that a dose of tincture of opium soon after calving, combined with nitrous ether or turpentine, is of great use in preventing milk fever. Great attention should be paid to cows having had a previous attack. In such cases a sedative such as T.

* The words in italics are my own, and are simply used as illustrating the various points.—F. T. H.

opium or T. aconite should always be given, as well as to those susceptible cows which have been dry a long time before calving. We should not however use chloral, I think, until the attack has set in.

(To be continued).

ROYAL VETERINARY COLLEGE.

Address by G. SIMS WOODHEAD, Professor of Pathology, Cambridge University.

(Our own Reporter.)

The inaugural address at the opening of the Session of the Royal Veterinary College, Camden Town, was delivered in the Lecture Room of the College, on Monday, October 2nd, by Professor Sims Woodhead. Colonel Duck was in the chair, and there was a large attendance of students.

Prof. SIMS WOODHEAD said: Mr. President and gentlemen, when my old friend, your principal, invited me to deliver the annual introductory address before your College and Council—great though the honour—I was sorely tempted to plead that I was too busy to think of preparing any address worthy the occasion. It then struck me, however, that perhaps it was well that some of us should meet in a relation somewhat different from that which we usually bear to one another in this College, and that for once I—not you—should do most of the talking, thus allowing you an opportunity of bringing to bear such criticism as you may wish to make, the results of which, if not immediately manifest in the examination list, might still be of as much use to me and others as I fancy some of my criticism must be to some of you and your prospective patients. For many reasons, however, my task should be light, the most important being that since my undergraduate days I have been so closely associated with many of those—from the students to your Principal and Professors—who have done such admirable work in your profession that I ought to be able to discourse for hours on the work of our doing, and of the practical and scientific outlook of the veterinary profession But, gentlemen, that very intimacy is the commencement of a serious difficulty, for it affords me the assurance that your interests and affairs are guided and guarded by men who would be able to give you far more valuable advice on many points than I can possibly be in a position to give. My one claim on you for a consideration of my words must be that I can approach the question from an outside standpoint—that I am, as it were, in the position of an onlooker, and that at no point can merely personal interest (in the professional sense) come in to bias my judgment. In saying what I have to say I speak merely for the honour of our science, for though our patients are not the same and our methods may in certain features differ, the principles that underlie the prevention, diagnosis, and treatment of disease—whether in man or beast—are essentially and fundamentally the same. That this is the case is evident from the fact that as our knowledge of disease has advanced, our methods have approximated much more closely than in the early days of medicine. It has sometimes been said that the doctor who has to diagnose and treat disease in the human subject enjoys great advantages over the veterinary surgeon, who has to treat a patient unable to express in words the pains and symptoms that oppress him. Now, is this really the case? As we get to know more of disease we gradually come more and more to minimise the importance of subjective phenomena and to rely more fully on accurate physical diagnostic methods. The physician who has to treat the young child is in the same position as the veterinary surgeon, but if we refer to the literature of medicine we shall find that in no department have greater advances been made and diagnostic methods better applied than in children's diseases, and our best physicians are undoubtedly those whose early training has consisted largely in the diagnosis and treatment of disease in children—they are more self-reliant, more accurate, and have a wider knowledge of those small but important points from which inferences may be drawn than are those who have had no such training. Every physician knows how greatly to be mistrusted are the so-called subjective phenomena of disease—they are certainly not necessary to precise diagnosis, whilst the man who relies upon them has usually a tendency to carelessness, and to accept and treat symptoms in place of finding out the pathological lesions upon a knowledge of which only can any permanently successful diagnosis be made and treatment be carried out.

Gentlemen, from the scientific and practical point of view you have the advantage. When a patient comes before you you may ask your questions, but you must answer them yourself, you are thrown entirely on your own resources, you must rely upon your own methods and upon your own mother-wit—trained or untrained. To you the thermometer, the sphygmograph, the microscope, and the test-tube are not merely playthings or for outside display. The results obtained from them must, along with your observations, be the only foundation on which you can build, and it is for this reason I say that you, as a scientific profession, have the advantage over us. Such being the case, how much more important is it that before you go out to take up your life's work you should avail yourselves of every opportunity of fitting yourselves to do your work scientifically and accurately. You are not here merely to learn routine work, you are here to prepare yourselves for the practice of a great profession, to be trained in scientific methods, to learn how to handle patients, the principles of your practice and the principles of treatment, not to go out into the world with heads crammed full of statistics and details, but with a knowledge of how to observe, how to reason on your observations, to find out what the conditions of disease are, and what inferences as regards treatment you must draw when your observations are complete. It is for you to be able to interpret statistics—not to remember them; to compile and reason from them, not to be mere receptacles for them. Then with the physical signs of disease—you are not simply to have a catalogue of them on the tablets of your brain, you should be able to picture in your mind the pathological processes that their presence indicates. The symptom is nothing but an indication of the processes that are going on beyond the reach of your direct observation. A physical sign is an outward manifestation of something going on within the body. It is your work, by the use of those signs and symptoms, to draw up for youself a picture of the diseased organs within, of the alterations in function and in structure that have gone on from the first, and to determine in your own mind the probable further course of the disease, whether you can by any means in your power stay the process of disease, whether it is possible to bring about any resolution of the diseased portion, cause its absorption, or put the patient into such a condition that the diseased part may be gradually cut off from the surrounding tissues, whether there is sufficient vitality in the tissues to make good or repair the damage done to them. All this, and more, must you be prepared to reason out and apply, if you are to be a good veterinary surgeon. Let me give you an example, a simple one, but one which shows you how interdependent organs and processes are one upon another, and how necessary it is that the whole history of a disease should be taken into consideration when we are diagnosing and treating it. In every septic or infective disease poisonous substances accumulate in the blood, coursing through the minute blood vessels which supply the various important organs and tissues of the body, and exerting a very definite influence upon these structures.

In a case of pneumonia or inflammation of the lungs, especially where there is acute fibrinous exudation into the air vesicles of the lungs, such as occurs in certain animals and under certain conditions, we are apt to look upon this local consolidation as being the only, or—as it is temporarily—the most important lesion in the body. Should the patient die, there is, of course, the coagulated fibrin in the air vesicles, there is also a layer of fibrinous lymph on the outer surface of the lungs, showing that the process is not confined entirely to the air vesicles ; but above and beyond all this, if we examine the liver we shall find that it has undergone certain special changes, and that under the microscope we have evidence that the liver cells have been poisoned by some toxic substance, as a result of which their protoplasm can no longer do its work properly. If we pass now from the liver to the heart we shall find that we have evidence of a similar change ; the heart muscle has been poisoned, it is working at a disadvantage. This poisoning of the heart muscle often leads directly to heart failure, and the patient succumbs, not because it has not sufficient lung surface left for the purpose of oxygenating the blood, but because the heart in its damaged condition is unequal to the task of propelling a sufficient amount of blood through the obstructed vessels of the lungs to allow of circulation going on properly, and ultimately, owing to the continued deterioration of the heart muscle it fails entirely and the patient dies. How important it is to remember this condition of the heart in such a case may be gathered from the fact that patients suffering from inflammation of the lungs when apparently well on the road to recovery suddenly collapse if they are called upon to undergo any slight extra exertion. All the exudation from the lung may have been absorbed, but the damage to the heart has been great—the poisoned muscles have undergone a kind of fatty degeneration ; and until these fatty fibres have got rid of the fatty substance and have resumed their normal character of contractile muscle, or until the old fibres have been absorbed and new ones have taken place, the heart is not equal to the extra strain : it gives way and the patient succumbs. The man who knows this when he goes into practice, knows how to safeguard the interests of his clients. He points out how the digestive processes, associated with the functions of the liver, are going on but feebly and diets his patient accordingly ; how the heart is weaker than usual, and so rests his patient and regulates its exercise to allow of a gradual restoration of strength before he puts any strain upon this organ that would do it damage. I might multiply examples indefinitely, but I simply wish to point out that if a man will attend carefully to his instruction in the College, he will gather knowledge in a week which may be as valuable as years of experience, and he will start his professional life with principles which enable him to commence where his predecessors have left off.

Gentlemen, whilst you are studying here I beg you to follow most closely the teaching of your professors. It is sometimes said that it is a good thing for a young man to take the bit into his teeth and follow his own bent, his own line of thought, and go his own pace. If each one of us had to start in life with a trained mind we might have taken such a course with impunity ; but in that case it would not be necessary for us to come to any College to be guided in our work. Much of what you learn here may, nay, must necessarily, in time pass out of your minds. Further, each one of you must be quite prepared to find when you come to look into matters for yourself, that you will not always find yourself in agreement with some of the teaching now given by your Professors, and this for two reasons—first, because by the time you come to think deeply and widely for yourself new light may have been shed on the subject, new light from various sources, by means of which much of what is now in deep shadow may be more fully illuminated. This should be no cause for self-congratulation—except that the additional light has been provided for your use—nor, on the other hand, should it ever be allowed to encourage a single thought of disparagement of the learning and accuracy of your teachers, who had to form opinions and give judgments under conditions of difficulty and uncertainty of which you necessarily can then have but a faint idea. The second reason that you will have for not agreeing with some of the teaching that you have received, and will receive under this roof, is, that if you are worth your salt as practitioners, and give your brain the full benefit of the advantages open to you here, you must necessarily develop some individuality and some original mode of looking at the subjects in which your life's work and interest will lie. You should add some new observation, offer some fresh interpretation of old observations, throw light into some dark corner or contribute some epoch-making discovery, which you may say is all your own, but which the world will say you share with those teachers whose knowledge you may imagine you are superseding.

Remember that here you are first digging down for a sure foundation, and that only when that is firm and well-prepared can, or should, you commence to build up the superstructure, of a life's work well done and beautifully finished.

Why should I insist on these differences of opinion that may arise, and draw attention to the almost kaleidoscopic change of knowledge? Because I wish to call your attention to one part of your work here, which if well and carefully done can never be useless, and will always remain with you. The principles that are here offered for your acceptance, for the guidance of your work, and for the acquisition of knowledge, are the outcome of the experience of many generations of workers and teachers. They are the foundation on which you will pile up observations and facts, whilst the methods with which you are here initiated may be looked upon as the scaffolding on which you must mount in order to rise with and beyond your building. Here the foundation and scaffolding prepared for and offered you are good and sound, and it will be your own fault if you do not take your share in getting down to the bed rock of acquired truth, for your foundation, and then in binding and staying the scaffolding of methods into a good temporary support for the lower storeys, at any rate, of your professional work. With a scaffolding well begun, it is easy to make additions as your building grows, but with a shambling scaffold no good building can be done, and no further stable scaffold, by means of which to carry our building higher, can rise.

I do not wish to be tedious, but I cannot refrain from taking as an illustration of what I wish to bring under your notice, a concrete example. In recent years Metschnikoff, by his brilliant work on phagocytosis, has drawn attention to one of the processes observed in inflammation in such a manner as to make some people believe that phagocytosis and inflammation were practically convertible terms. If you read the recent literature on the subject of inflammation you will be astonished to find that in all probability your principal—I ask his pardon for using this illustration—will devote perhaps less than one sixth of the whole of his lectures on inflammation to phagocytosis. If you think too much for yourself (I mean in the conceited sense) at this period, you will wonder why this great present-day question of phagocytosis does not receive more attention. If, however, you will keep your thoughts to yourself until the lectures are completed you will probably never express them at all, for you will find that since John Hunter's day, and since Waller, Wharton Jones, and Cohnheim made their wonderful contributions to our knowledge of the behaviour of the white blood corpuscles in their passage from the blood vessels into the surrounding tissues,

slight additions to our knowledge of the subject have from time to time been added. Cohnheim's foundation was so sure that although these additions have filled in gaps, and have helped to round off our knowledge of the process as a whole, little or no essential modification of the work that he did has been necessary, or even possible. Now your Professor knows all this, he has passed through the mill of his reading and experience, all that has been written, and the work that has been done in connection with inflammation. He has made his own observations on his patients, has performed experiments, and has had many natural experiments performed for him, and as the result of much probing, sifting, and arranging he has been able to select what is worth studying, to lay stress on important points, to build up, as it were, for you a picture of inflammation which will serve as a basis for your future work, and which you yourselves could only have arrived at after years of careful study. He will tell you that it is impossible to take any one special tissue or function and allow it to arrogate to itself the credit of being the seat of, or the cause of the whole process of inflammation. It is well that those who make new observations and start new theories should be enthusiastic, and, shall I say, a little over-sanguine or even one-sided.

The things which are near to us and which we study most thoroughly and carefully are apt to block out from our view other important, perhaps more important, matters. Further, it must be remembered that the side of a house to which we stand close will block out the view of a whole country side, and even of a mountain the size of Mont Blanc, though from our early experience and acquired knowledge of perspective, we are not misled. When we come to matters scientific, however, our knowledge of true perspective is at first *nil*, and it takes a long time for us to acquire an accurate working knowledge thereof. Until that is acquired it is well for us to trust those who have given their lives to its study.

Remember, moreover, that you will be assailed from all sides by men who have worked carefully, each in his own little patch of ground, who will tell you that the products of his garden are the only ones worth gathering. Do not believe them. Accept what each has to bring, put it through the mill as you have learned from your professors to do, and then add it to your store of knowledge, fit it into its proper place in the scheme that you desire for your mental discipline, or if you find it worthless, throw it aside altogether. We have seen that in inflammation certain people tell you that phagocytosis is everything, others that without chemiotaxis there could be no inflammation, others that damage to the tissues is an essential—others that only when you have a process of proliferation and repair can there be inflammation. You will find that all these factors enter into the question. Each has its importance, each plays its part, but you cannot say that any one is all important in itself, or even is a necessary part. The exaggerated importance given to each factor arises out of the fact that many of the processes had been studied on simple protoplasmic bodies, in which as yet there is but little specialisation of function. It is assumed that because certain amæboid or even organisms slightly more specialised, behave in a certain fashion when they are exposed to the action of irritants, that therefore cells which in the higher animals have a similar appearance and perhaps also to a certain extent similar functions must do exactly the same thing when they are irritated. That is only a half truth, but it has so specious an appearance of whole truth that it may deceive the unwary. It must be held that inflammation occurring in the higher and more specialised and complex animals is necessarily a far more complex process than it can be in the less specialised form of animal life. Indeed in the less specialised animal we can scarcely expect to find more than a very small part of the process which we recognise as inflammation in the higher animals, all of which have well-developed blood-vessels. In these vessels are coursing red and white blood corpuscles suspended in a fluid of definite composition. Around these vessels are tissues of various kinds (muscle, nerve, etc.) and in all of them are channels and connective tissue cells and spaces. All these have to be nourished, all are the subject of various kinds of stimulation, all have to get rid of effete matter, and any or all of them may at any time be impaired. Even under normal conditions dead tissue has to be got rid of, whilst much more is this the case when tissues are injured, mechanically, chemically, or the like, a new tissue or some substitute has to be developed to take the place of that which was lost. In certain of the simpler cells many of these processes, normal and abnormal, may be seen going on, and sometimes we think we understand how they go on, but in the more complex animals in which we have to study these processes, we can only guess at the modes in which such processes are carried on, we cannot see any of them. We may know something of the actual resulting products, but beyond that, learnedly as we may talk, our real knowledge is still very scanty. Certain processes that are observed in inflammation of the higher animals then, so far as we can determine by our observation and analysis of results, are seen to be analogous to certain of the processes observed in simpler animals and cells, but it would be a dangerous matter to conclude that the part, or even collection of parts, seen in the lower organism is equal to the whole of the complex process of inflammation as presented in the more highly developed organism. The vessels then, with their red and white cells, these latter of various form and function, give us something quite different from anything that occurs in the non-vascular animals. One of the essentials of acute inflammation is a process of passage outwards into the surrounding spaces or tissues, first of the fluid in the vessels and blood plasma, and secondly of the various colourless and red blood corpuscles, the former not only giving rise to the round cell infiltration that we see, but in all probability along with the minute blood platelets breaking down to combine with certain elements of the blood plasma to form fibrin. Here then we have a something, which does not, as far as we are aware, occur in the lower forms of animal life. Beyond this, however, we have a series of proliferative changes which are so widespread in inflammation, and can be so readily watched, that they are well worth careful consideration. Not only do the wandering cells or leucocytes proliferate, but in a much more marked degree the fixed cells that enter into the constructive process of building up connective tissue, whilst there may also be seen distinct enlargement, and then proliferation of the specialised cells composing the endothelial lining of the blood and lymphatic vessels. In addition we have the changes that take place in the more fully specialised tissues, so that it may be gathered that inflammation, however fundamentally simple it may be, is an enormously complicated process when it comes to us, and not to be studied in any one of its branches alone. This, gentlemen, is a single example, but you will find that the same truth holds good, whatever branch or part of your professional study attracts your attention, and demands the expenditure of your brains and energy in its study.

One of the great advantages, gentlemen, that you now enjoy is that you enter your profession with a preliminary training that many of your predecessors were not compelled to go through. The Royal College of Veterinary Surgeons insists that those who are to take its diploma shall receive an education which will enable them to profit from the teaching offered in the Colleges, and, gentlemen, although there may be no greater giants in the profession now than there were in days gone by, since the standard of preliminary education has been raised,

there are certainly far fewer pigmies, and the general stature has, even in my limited experience, risen enormously. The outstanding men of to-day had their counterparts in the outstanding men of the last generation and of all early generations, but the average power of the profession has never been so great as it is to-day. I have sometimes been told by those who maintain that there were no days like the old days, that it is a mistake to ask for such a high standard of scientific knowledge from the man who is going to be what is called a practical veterinary surgeon. We are told that men cannot handle a horse now as they used to, that they have not the same knowledge of his points, and that their practical treatment of his diseases are not what they were. Now, gentlemen, I for one do not believe this. That he does not devote so much of his time to the breaking in and management of horses, to the blistering, cupping, and setoning of horses, I may agree, but beyond that I cannot go. The man who is going into the country to be away from contact with his fellows and from those who are engaged in scientific work is the very man who should have his foundations sure and his training thorough, for in after life he is to be thrown entirely on his own resources, and unless he makes the most of his college training there is only too great danger that he will settle down to an early professional life of blunders and losses and, when experience comes, to one of dull routine and *laissez faire*. The science of veterinary medicine and surgery is now so far advanced that not only are practical veterinary surgeons required, but men expert in all that relates to the preventment and treatment of disease. Such men must be trained for the public veterinary service, they have places to fill which are now imperfectly filled by other men, and they have a work to do which can be done by them and by them alone. To such men the training given during the four years course in your colleges is essential, and those who are to do the highest work will find that hard as they may work during the period of four years, they have still much special training to go through before they are fitted to undertake the duties that will devolve on them. Many of you will specialise in some direction in later life, but all will find that a combination of the scientific and the practical, such as they obtain during their course here will be essential to their professional success. Even in what is called practical training in the profession how much more can be taught in a short time where the best methods are selected and the teaching of them is systematised, than under the old system of pupilage under men of whom perhaps only one in five had any special information to impart, and only one in ten of these were able to impart it. Of course I fully appreciate the fact that a man's future career must, to a certain extent, depend upon his very early training, and that, other things being equal, a lad who has been brought up amongst horses, whose knowledge of them grows as he grows, who is with them during the most receptive and impressionable years of his life, will make a better practitioner than the man who has only had his College training, and who has only come in contact with animals during this period ; but if I am asked to commit a horse of mine to the care of the well-trained college student on the one hand, or to the so-called practical man who has wasted his time at college, or who has neglected his principles in order to devote more time to his practice on the other, I should have no hesitation as to which I should select. I distrust the man who knows every point of a good horse, but diagnoses disease at sight ; but if in addition to knowing a good horse when he sees him, he starts methodically and systematically to overhaul the animal, to examine him thoroughly, and gives evidence that he has a knowledge of disease generally, then I feel that I am in safe and competent hands, and I know that what can be done will be done.

Such men now fortunately are common, men who love animals, who have acquired a control over them, who, in addition, have acquired methods and a scientific ground work which may be developed later, either into the capacity for treating disease or, what is more important still, preventing it. I have a theory in regard to the men of my own profession which I think might apply with equal force to yours, that is, that the best men in the profession will learn anywhere, that the worst are practically hopeless and will learn nowhere, but that the success of the average man depends to a very large extent upon the nature and extent of his early and professional training. You know that different schools are characterised by different methods—that one insists upon its alumni being thoroughly well educated to begin with, and then, whilst compelling them to devote a certain amount of time to what may be called the art of the profession, lay very great stress upon a thorough training in scientific methods of observation and logical methods of induction and deduction. Another school insists that as a man is to be engaged in the treatment of disease he should devote the after part of his time to the practical observation of disease in the wards, and to familiarise himself with the drugs, instruments, and apparatus by means of which disease may be combatted. I have carefully watched the careers of the average men from these two sets of schools, and have observed that for a year or two the so-called practical man appears to get ahead of his more scientific compeer. He has more "*nous*," his patients have more confidence in him because he seems to be familiar with the means of curing, but at the end of five years there is no comparison between the two men. The man who began well has lost nothing, has perhaps even gained ground—he has five years experience at his back ; but the man who had only his practical work to learn has now learnt it. It is for him a means of bringing to bear on diagnosis and treatment methods which he is satisfied for observation, deduction and induction are necessary for the welfare of his patient, or his client, or the public ; he not only knows what the lesions he has to treat are, he knows how they are brought about, what their cause is, and how they can be prevented ; he not only treats and safeguards the individual patient but he takes measures to prevent a further outbreak ; he takes a wider view of disease, and therefore, ultimately is by far the more successful practitioner. If a man's principles and methods are sound and scientific his practice is soon perfected, whilst if these be faulty or absent there is far too great a danger that practice may become mere routine. As Sir Michael Foster said at the meeting of the British Association the other day, scientific men may be commonplace and our methods merely founded on common sense, but, gentlemen, science is a glorious temple built by commonplace men and of commonplace materials. Unfortunately as we build, each in our own little corner, we are apt to keep our eyes immediately in front of us and to think that our own little piece of wall is the most important in the building. We forget the gloriously solid foundations laid down by those who have gone before us, and without which our building could not have reached its present height. Some, again, when they have contemplated their own work are so engaged in looking down on what has been done that they have no time to contemplate the possibilities of raising a still more beautiful superstructure on what has been already built, they think it is time to put on the roof because they are convinced that all obtainable knowledge has been crowded in our time, or, at any rate, to forget that times may come when our building shall appear a mere foundation of a grander edifice than we can yet conceive. It is only such men as Darwin who have the power of seeing how small their apparently great work may appear in the future. He writes : "What a science natural history will be when we are in our graves, when all the laws of change are thought one of the most im-

portant facts of natural history." His own great work which produced a revolution in the scientific world was, with him, as nothing except as a foundation on which future great workers might build. From our point of view some of Darwin's analogies and contrasts could not now be accepted, but that does not render his work any the less valuable. He had to grope in a bosky wood in which there were few paths by which to travel, and few openings by which light could find its way; but he made paths for his followers, and clearings through which light might come, and if we do not follow all his paths it is because of the light that he has allowed to break upon them. For example, in defining his "struggle for existence" Darwin drew a distinction between certain epidemics which he attributed to the great increase of the number of species confined within a small area, and the epidemics due to parasitic worms. In the latter case he mentioned that there was actually a struggle for existence going on between the parasitic organisms and their hosts, whilst in the case of the epidemic due to crowding he maintained that the principles involved were probably not of the same character. We now know that in both cases there are parasitic organisms at work, and what applies in the case of one must also apply in the case of the other. We have merely a difference in the size and nature of the parasitic organisms. In the one case we have the large animal parasites—worms etc., in the other small vegetable parasites—bacteria, micrococci and the like. And so, as knowledge extends, details have to be altered and anything founded on inaccurate details must necessarily fall. But the great principles and theories founded on accurate observation must ever stand as monuments of the work that has been done, and as foundations on which future generations may build with confidence. Tradition that will not stand the light of present day observation must go by the board; but let us not be blinded by a too close and continuous application of our mind's eye to what is simply before us. It is well at times to withdraw ourselves from the present to think over the past, to speculate on the future and to see what relation the observations of the present bear to these. Only thus are we able to appreciate the way in which great minds evolve their theories and show any tangible results of their speculations. The subject is a fascinating one, gentlemen, but it would take too much of my time and of your patience for me to go further into it.

There is one subject on which I should like to say a few words as it is one on which I feel peculiarly competent to express an opinion. We are essentially a practical people. I have recently been travelling in countries from the peoples of whom we have much to learn, but who come to us for information and guidance whenever any practical measures have to be taken for dealing with disease, even when we are under a deep debt of obligation to them for light and information as to the causation of disease. It strikes me, however, that in certain matters we do not exhibit that practical spirit in anything like the degree that we ought to expect, and I will take three examples as texts from which to preach, and which may afford food for reflection to many of us. They are of especial interest to many of us.

For years swine fever has been a scourge amongst us. We have had an elaborate system of inspection, of central examination and of compensation. But how far have we been successful in coping with disease? Now I do not know whether my veterinary friends will agree with me on some of the points that I am going to raise, and I am looking at the matter as an outsider, and I shall be quite open to correction on any points of detail. I believe we are going the wrong way to work to get rid of the disease. Into the question of compensation I scarcely feel competent to enter, but I cannot help thinking that this permanent system of compensation has something to do with the continuance of the disease amongst us. At present, if the disease breaks out in an area, the farmers are sure that their loss will not be borne entirely by themselves; and even the best of men have not the same stimulus to exert themselves to adopt preventive measures, when they are assured of certain compensation, as if they were to feel that they would inevitably be involved in considerable loss if the disease should break out amongst their swine. Some temporary system of compensation might no doubt be just, but it should be for a period only sufficiently long to enable effective measures to be taken against the spread of the disease. In the matter of inspection, however, I hold that at present, where such enormous capital is at stake, we are making a grand mistake. I do not for a moment wish to hint even that the men who are at present doing the work are not capable of carrying out the orders that are given to them. They are no doubt an intelligent set of men, honourable, active, energetic, but the work that they should be called upon to do is not that for which they are fitted. For administrative and secretarial work keep them in their present positions, but for the actual inspection of buildings, of animals—whether dead or alive—I maintain that no one but a thoroughly qualified veterinary surgeon should be employed, and this for many reasons. Only a veterinary surgeon can understand the disease thoroughly in its many-sided aspects. The symptoms, the lesions, and the like are not always the same, and an inspector may be years before he sees every lesion and appearance that may be present in such animals, and during the time that he is gathering his experience, the latent and irregular forms of the disease are centres from which infection may be spread broadcast. An inspector who has been brought up as a soldier or in some civil occupation not associated with scientific work, can have little knowledge of the principles of infection and disinfection, of hygiene, and the like, by means of which only can the disease be prevented. He cannot keep himself *au courant* with most of the recent discoveries as to the pathogenesis of the disease, he must always be behind the veterinary surgeon, and never so completely equipped. More than this, what inducement has the ordinary inspector to get rid of swine fever. He has been taken from his previous occupation to stamp out a disease by the disappearance of which his present occupation would be gone. I do not say that this can weigh with the bulk of men, but there are always a few men in whatever sphere of life one moves with whom an inducement of such a kind has a certain amount of weight, even though in some instances he may be unconscious of it. In the case of the veterinary surgeon, when swine-fever disappears he has still some other branch of his profession to fall back upon. Now in a matter of this kind it would be inadvisable to move rashly, but I should like to suggest an experiment which I should divide into two parts. First I would offer to the inspector of the district an honorarium as soon as swine-fever has been cleared out, and I would also promise that as soon as his services were no longer required, that is, as soon as the disease had disappeared from his district, he should be appointed to some administrative civil service post in which his salary, present and prospective, should be at least equal to that which he is receiving as an inspector. The second part of the experiment should be that no one other than a veterinary surgeon should afterwards be appointed to take charge of the purely veterinary and hygienic inspections in connection with the outbreaks of swine-fever. It would not be necessary that he should be specially appointed, but he should be one of the departmental staff, in the course of whose work the outbreak of swine fever would be a mere incident. Now that we have anthrax, tuberculosis, swine-fever. and similar infective diseases to deal with, the importance of having a larger veterinary staff is becoming daily more evident. It may

be objected that the standing cost would be heavy, but I am satisfied that it would be a mere fraction—first of all of what is being paid out for compensation, but, more important still, of the enormous loss incurred through the ravages of diseases which are to a very great extent preventible.

If we consider what was done in the case of contagious pleuro-pneumonia, where energetic and systematic measures were devised and carried out by skilled veterinary advisers and administrators, we cannot doubt that the same men would be capable of getting rid of swine fever.

Another matter to which I should like to refer is the so far successful effort that has been made to get rid of rabies from our midst. It was not long ago that anyone advising systematic muzzling to be adopted for the purpose of stamping-out rabies would have been laughed at as an enthusiast and hooted down as cruel, and no government would have dared to carry out the behests of such an individual. Some may say that it is the practical man who has brought this about. I do not agree with this, I hold that, curious as it may appear, Pasteur's researches on hydrophobia have been the means of rendering such a course as that recently adopted by the Board of Agriculture at all possible. Should there ever be another outbreak of hydrophobia, as there may be when the lessons of the last few years have been forgotten, I am convinced that no half-hearted localised measures will be adopted—every dog in the kingdom will be muzzled at once, and the result will be that instead of it taking two or three years to get rid of rabies, as has now practically been the case, there will not be a rabid animal left in the kingdom in six months. The Pasteur system for hydrophobia must remain in force and be of great value so long as there are rabid dogs in existence and so long as the disease can be transmitted by the wilder animals, but in civilised countries and in those where wolves do not exist universal muzzling will do away with any necessity for the Pasteur treatment. Scientific men do not wish to keep any special method of treatment in use after it is no longer required, and no one would hail the disappearance of the necessity for the use of Pasteur's—or any other inoculation, with greater delight than would medical and veterinary men.

I want you to think over these subjects, gentlemen. When you go out into the world you will have your part to play in forming public opinion, and in advising the course of action to be taken by those who rely upon you for assistance; and the more solid the foundation of your advice, the more it is based upon sound principles and scientific accuracy, the more readily will it be accepted by those for whose benefit it is offered. How markedly this applies to one of the questions of the hour—tuberculosis. Extremists of all kinds have had their say, each man, according to his interest or his predilections, has insisted upon or deprecated the importance of the various methods of spreading and preventing tuberculosis, and we are gradually coming to see that the spread of tuberculosis is not necessarily according to any one method, but that there are many forms of distribution. We have now got over what may be termed the time of panic. With the growth of our knowledge of the means of the spread of the disease, has come light on the methods of prevention, and we are now even far more hopeful as regards treatment; but withal we have come to see that it is only by the co-operation of medical men, of veterinary surgeons, of public administrators and of those who are interested in the raising of cattle and the supplying of milk, that we can gradually eliminate tuberculosis. One branch of this work, gentlemen, falls to your lot. You must bear some of the responsibility and in return receive the thanks of the community when the work is done. You have, along with your medical brethren, to educate people up to the knowledge of the fact that tuberculosis is a specific infective disease; you have to point out that without the tubercle bacillus there can be no tubercle, but also to indicate that the tubercle bacillus may be present without giving rise to tuberculosis. You have to show that, common as the disease is, it is a preventible disease, and that the first thing to be done in preventing its spread is to find out the centres of infection. That being done, the battle is half won. It is for this reason that you are so thoroughly instructed in the use of tuberculin, by means of which, as is now recognised, the most latent forms of tuberculosis may be made out. You are to show the farmers that it is to their interest to have nothing but healthy stock; you have to prove to them that some of their stock *is* unhealthy, and that, quite apart from the danger that a tuberculous animal may be to the community, and quite apart from the fact that it is possible now and again to feed a tuberculous animal so that it may be disposed of at a fair market price, that he is dealing with a disease which may render it impossible or at any rate very uneconomical to feed cattle for the market. The more serious aspect of the question—the danger to the public health—cannot be demonstrated to the farmer in the same way as the less serious aspect can, and therefore he is not so ready to receive it; but once let him be convinced on either point, and I am satisfied that there will be little difficulty in prevailing on him, first of all to submit his animals to the tuberculin test, and, secondly, to place them under such conditions that the danger of spread of tuberculosis may be considerably minimised.

I am speaking to you now as veterinary surgeons. If I were addressing an audience of medical men I should have to point out other and perhaps even greater or more important methods of the spread of the disease, and I should have to insist upon other methods, prophylaxis and treatment, but it is only by each one doing his part and working towards a common end that we shall ever be able to get rid, or reduce to a minimum, the fearful scourge now raging in our midst—tuberculosis.

Gentlemen, I wish you a pleasant and instructive year and I believe that you can have that in one way, but in one way only. Keep a sound mind in a healthy body. Health is one of the greatest gifts God has given to us. Without it the best trained mind cannot do its best work. To you one and all I say, do not loaf; work whilst you are at work, but when you have finished and feel that you have done your duty, play your very hardest, and apply practically in your own case those physiological laws concerning muscular action, respiration, and nutrition, by means of which mind and body may be kept in a condition that will enable you to give of your very best to yourselves, your patients, and the community. (Loud cheers).

On the motion of Sir ERNEST CLARK a vote of thanks was unanimously accorded to Professor Sims Woodhead for his instructive address.

Professor MCFADYEAN read the list of prize winners, and announced that 73 per cent. of students had passed the July examination as against 72 per cent. last year.

Sir NIGEL KINGSCOTE moved a vote of thanks to Colonel Duck, who had been called away early in the afternoon, for presiding at the opening of the address, and also to his locum tenens, Mr. Harold Swithinbank, who had so ably discharged the remaining duties.

The resolution was carried by acclamation and the proceeding terminated.

SALE OF MR. CLEMENT STEPHENSON'S ABERDEEN-ANGUS CATTLE.

There was a large and representative company at Balliol College Farm, Long Benton, Newcastle-on-Tyne, on Wednesday, 27th ult., when a portion of the celebrated herd of Aberdeen-Angus cattle, the property of Mr. Cle-

ment Stephenson, was sold by auction. Luncheon was provided in a large marquee near the farm from half-past eleven until one o'clock, when the sale commenced. By that time the cattle had been inspected in their stalls with evident satisfaction. The quality shown throughout confirmed the opinions founded upon the descriptions and history of the herd already published in these columns. The success attained by Mr. Stephenson in this particular line of cattle-breeding was made manifest on every hand, the results of the sale being very satisfactory.

Summary.

	Average. £ s. d.	Total. £ s. d.
8 Cows	53 11 0	428 8 0
13 Two-year-old heifers	40 9 3	526 1 0
10 Yearling heifers	42 12 7	426 6 0
9 Heifer calves	31 19 4	287 14 0
1 Stock bull	157 10 0	157 10 0
3 Yearling bulls	31 3 0	93 9 0
6 Bull calves	23 2 0	138 12 0

50 head averaged £41 3s. 2d., total £2,058.
—*Live Stock Journal.*

THE PREVENTION OF TUBERCULOSIS IN CATTLE.

The following instructions, compiled by Mr. A. M. Trotter, M.R.C.V.S., Veterinary Surgeon to the Corporation, has been issued by the Health Committee of Glasgow in the form of a card, to hang, printed in large clear type, for the information of those concerned in cattle and dairying.

The Committee on Health of Glasgow hope that cowkeepers and others will read this paper carefully, and adopt the instructions which it contains, and any others given by the Veterinary Attendant having the same end in view.

The cause of Tuberculosis in cattle is the tubercle bacillus. It is seldom transmitted from parent to offspring before birth. This is proved by the rare occurrence of the disease in calves slaughtered a few days after birth.

Illness, too heavy milking, overcrowding, damp, dark, ill-ventilated sheds or byres—in short, anything which lowers the vitality of the system—predisposes the animal to contract it.

An animal can never become tuberculous unless tubercle bacilli gain access to its system.

It is possible, therefore, with care and attention to detail, in the course of a few years to replace a herd largely composed of tuberculous animals by healthy stock.

It is to the farmer's advantage to do this, for not only can he command a higher price for his animals, but he is also in possession of a stock free from a disease which, under ordinary circumstances, would sooner or later end in the loss of some of them.

Protection of Calves.

Calves should be removed immediately after birth to a well-lighted, airy shed, set apart for their reception; the walls and floor of which should be covered with cement to permit thorough cleanliness.

Each animal should have a manger exclusively for its own use, which should be kept scrupulously clean.

Calves should be fed on milk drawn from *healthy* udders, and when weaned tested with tuberculin.

The greatest care should be taken to secure milk free from filth.

Separation and Isolation of Affected Animals.

As it is of the utmost importance to detect the disease in its earliest stage, it is necessary to have all animals (old and young) tested with tuberculin at short intervals.

The reacting animals must be removed and placed in a separate shed; fattened and got rid of as soon as possible.

The separation of the affected from the healthy is best accomplished by placing them in separate sheds, but where this is impossible, a close wooden partition covered with felt—completely shutting off all communication—must be erected.

This is important, as an affected animal may appear in good health but at the same time be a danger to its fellows.

Preventive Measures.

It is imperative that no tuberculous animal be permitted to remain with the healthy.

Abundance of light, free admission of fresh air, and thorough cleanliness, are necessary for the prevention and suppression of tuberculosis.

As the tubercle bacillus is soon destroyed when exposed to strong daylight, the flooding of a byre with light is simply utilising nature's method of disinfection.

The free admission of fresh air improves the health of the animals and tends to fortify them against the bacilli which may find their way into the system.

Light and fresh air are invaluable aids in the prevention of tuberculosis, but they can be of little avail if thorough cleanliness is not observed. This can only be accomplished when the walls, floors, and trevasses are constructed of some smooth impervious material. As the raising of dust simply means its spread throughout the building it is best got rid of by the free use of water.

All animals evidently suffering from Tuberculosis should be slaughtered without delay. It is cheaper than prolonging the life of an animal (which can never repay the trouble and expense incurred). Such animals are a constant source of danger, as bacilli are ejected from the lungs and through the bowels.

Spitting in any building where animals are kept should be avoided, as the spit of a consumptive person contains tubercle bacilli in great numbers, and when dried and reduced to dust becomes a source of infection.

Animals should be kept in the open air as much as possible.

Milk.

Milk drawn from tuberculous animals must always be regarded as suspicious and unsafe for food, as it is impossible to determine when the udder may become invaded by the disease.

Tuberculosis of the udder may be suspected when a hard painlesss lump gradually increasing in size is detected.

The milk of all animals so affected is extremely dangerous, and it should be destroyed.

A. M. T.

Sanitary Chambers,
Montrose Street, Glasgow, July, 1899.

THE BOARD OF AGRICULTURE AND INVESTIGATIONS OF OUTBREAKS OF CONTAGIOUS DISEASES AMONGST ANIMALS.

We have received a letter from a correspondent complaining of the method at present adopted by the Board of Agriculture in connexion with investigations of outbreaks of contagious diseases amongst animals. In the particular instance adduced by our correspondent the recent reappearance of rabies in Wales was quoted and it was pointed out that Captain MacIlwaine, R.N., who was sent by the Board to investigate the matter, has no scientific veterinary knowledge. He appears to have been unaccompanied by an expert. The subject has excited a

good deal of attention and comment in veterinary periodicals during the past few years and it certainly does seem to us illogical that outbreaks of contagious disease amongst animals should be investigated by men who have no special qualifications for the task. The position is about on a par with that at present in vogue in many of our large towns whereby inspectors of animal flesh intended for human food are chosen from amongst plumbers, masons, and omnibus conductors. But because the position is not unique it is none the less an anomalous one. It is not so long ago that the Government had a properly organised veterinary deparament with a veterinary surgeon at the head. Under its control cattle-plague, foot-and-mouth disease, and pleuro-pneumonia—three great scourges of the bovine race and sources of enormous annual loss to agriculturists and dairymen—disappeared permanently. Contrast with it the present state of affairs. The title "Animals" has been substituted for "Veterinary" Department, a proceeding which has given much umbrage to the members of the veterinary profession and an ex-army officer has been placed at the head instead of a properly qualified expert. The results have been only too obvious in the case of swine fever where nothing but failure can be reported, while the delay caused by unnecessary red tape procedures favours the spread of the disease before any efficient action is taken. The travelling non-veterinary inspector is not out of place where no diagnosis has to be made, for he is fully capable of seeing that proper disinfection and modes of burial are carried out, but to send him in the first instance to investigate and advise regarding an outbreak of disease (as appears to have been done in the case referred to by our correspondent) is clearly putting him in a false position. Here the services of a veterinary surgeon surely are required.—*The Lancet.*

WILLIAMS' SURGERY.

Messrs. Menzies and Co., of Edinburgh, have issued the ninth edition of this well known text book. How many practitioners, we wonder, have derived their surgical knowledge from this volume during the years that have passed since the first edition appeared?

The preface states that "The call for a new edition has given the author the opportunity of making a thorough revisal thereof, and embodying the results of the most recent discoveries." The title page suggests that the editing has been done by Professor Owen Williams. We do not propose to enter on a detailed criticism of the book. A *Ninth* Edition is evidence of its value, and renders such a task unnecessary. We have always thought that as a student's text book or as a practitioner's reference we have no other. There may be opinions as to the value of some of the purely scientific teachings, but there can be no difference of opinion as to the clinical descriptions. Wide and varied experience expressed in clear language mark every chapter, and only a first-class practitioner could have compiled the work.

If there is one section better than another it is that on the different lamenesses of the horse. The symptoms are very clearly stated, and the treatment is in accordance not only with scientific teaching but with the experience of those most likely to know. We may perhaps here express our surprise that the new edition takes no notice of the well established fact that those cases described as "dropped elbows" or "radial paralysis" are due to fracture of the first rib.

The book runs to nearly 800 pages, and is embellished with 150 illustrations, some woodcuts and others lithographs. The publishers have done their duty in printing and binding, and students and practitioners may confidently order the new edition.

CORRESPONDENCE

THE A.V.D. TITLES.

Sir,

In reference to the above subject, would you kindly allow me space in your journal to represent the opinion which is held by many veterinary officers in India. As a department we are much indebted to the veterinary colleges and to the profession at large for the position which they have taken up on our behalf. It is obviously unfair that the concession which has been granted to every other branch of the Army should be denied to the Veterinary Department alone. This is the ground on which the abolition of the prefix "Veterinary" before the military titles is claimed. Except for this reason, the change is not one which the veterinary officer yearns after or which he feels to be essential to the welfare of himself and his department.

I have heard many medical officers express regret that a contest was made for their "titles." It does not seem to have benefitted them much, or to have increased the competition for that corps. The truth is that the question of "titles" was a side issue, and did not represent their real wants, and now their mouths have been closed for a time. I fear we are rushing into a like error. The possession of unqualified military titles may flatter individual vanity, but it is only of visionary benefit. We ask for this, because it has been given to medical officers, while we remain on a much inferior scale to them in all substantial points such as pay, promotion, pension etc. Let the question of "titles" stand for the present. This concession will come in time, as did the five years tour in India. It is a concession which does not cost the Government money, and the opposition which was strongest against the Medical Corps is not against us.

Don't waste time in a struggle for titles when many more real evils call for remedy. The veterinary officers have many real grievances. There are many conditions of service extremely unfair. The young officers have to serve in India on pay varying from £60 to £80 a year less than at home. The slow promotion is galling, both socially and otherwise. A veterinary officer of nine years service, and who is 35 years of age or thereabouts, ranks with combative officers of 22 or 24 years of age, while medical and other officers are one or two steps above him. This disparity continues throughout his whole service. The work in India is arduous. Leave, except on medical certificate, is difficult to obtain. The pensions are the lowest given to any scientific corps. An explicit representation of these unfair conditions has already appeared in the pages of your journal.

Let us obtain some improvement in these conditions and we can afford to allow the question of "titles" to work its own salvation.

"AN ANGLO INDIAN."

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Messrs. A. M. Trotter, T. V. Pettifer, J. Marshall, C. M. Holmes, "A Aeterinary Surgeon." "An Anglo-Indian."

Jrnl. of Comp. Med. and Vety. Arch. (Phila., Sept.) "*Swine Fever in New Zealand*, *Evening Argus* (Brighton).